

REMARKS

The active claims are drawn to a catalyst comprising the combination of two amines, viz., (1) a trialkyl monoamine, wherein the each alkyl is independent of the others and is a C₁₋₂₀ alkyl group, and (2) at least one amine compound selected from the group consisting of triethylenediamine, N,N,N',N'-tetramethyl-1,6-hexanediamine and N,N-dimethylcyclohexylamine. The catalyst is recited in independent Claim 1 as "for producing a rigid polyurethane foam by means of at least one blowing agent selected from the group consisting of 1,1,1,3,3-pentafluoropropane (HFC-245fa), 1,1,1,3,3-pentafluorobutane (HFC-365mfc) and a low boiling point hydrocarbon."

The rejection of Claims 1, 2, 29 and 32 under 35 U.S.C. § 102(b) as anticipated by U.S. 4,910,230 (Tamano et al), is respectfully traversed.

In response to Applicants' argument in the previous response that at best, Tamano et al is available under 35 U.S.C. § 103(a), but not under 35 U.S.C. § 102(b), because the disclosure in Tamano et al is inconsistent with that type of disclosure required by *In re Arkley*, 455 F.2d 586, 590, 172 USPQ 524, 526 (CCPA 1972), the Examiner simply finds that the claims, in effect, "do not exclude the combination of triethylene diamine with triethylamine as a co-catalyst."

In reply, the Examiner's finding is meaningless. Of course, the present claims do not exclude the combination of triethylene diamine and triethylamine. The issue rather is whether the disclosure in Tamano et al is such that it constitutes an anticipation. To review, Tamano et al discloses a fine-cell rigid polyurethane foam prepared using an amine catalyst comprising triethylene diamine, various other required amines, and formic acid (column 3, lines 27-35). Tamano et al discloses further that a known tertiary amine catalyst, such as triethylamine and dimethylcyclohexylamine may be used as a co-catalyst (column 4, line

48ff). However, Tamano et al discloses no examples of their triethylene diamine with a known tertiary amine co-catalyst, such as triethylamine.

The Examiner has performed no fact-finding analysis pursuant to *Arkley*, i.e., has not shown where Tamano et al “clearly and unequivocally disclose the claimed [subject matter] or direct those skilled in the art to the [subject matter] without any need for picking, choosing, and combining various disclosures not directly related to each other by the teachings of the cited reference.”

For all the above reasons, it is respectfully requested that this rejection be withdrawn.

As a preface to the traversal of the rejections under 35 U.S.C. § 103(a), it is worthwhile to review the nature of the present invention, and Applicant’s evidence in support of the superiority thereof.

As explained in the previous response, Applicants have discovered that the above-discussed combination of amines produces a polyurethane foam that is superior to one using either amine component alone as a catalyst when used in conjunction with a blowing agent selected from the group consisting of HFC-245fa, HFC-365mfc, and a low boiling point hydrocarbon.

Two sets of comparative data in the specification evidence this superiority.

In the first set, which demonstrates the significance of using HFC-245fa or HFC-365mfc as the blowing agent, Examples 1-24 are according to the presently-claimed invention, and Comparative Examples 1-29 are not. The only difference between Comparative Examples 1-14 and the Examples is the catalyst used. Comparative Examples 15-26 employ the amine combination of the present invention, but with HCFC-141b as the blowing agent, i.e., a blowing agent other than HFC-245fa, HFC-365mfc, and a low boiling point hydrocarbon.

The data are shown in Tables 2, 4 and 6, at pages 58-59, 62, and 67, respectively. As described at page 68, lines 14-16, in each Example, a rigid urethane foam excellent in flowability, adhesive strength and dimensional stability, was obtained. For Comparative Examples 1-4 and 8-11, which used only amine (1) as the catalyst, large amounts of the catalyst were required, and the foams were inferior in flowability and dimensional stability, as described at page 68, lines 17-23. For Comparative Examples 5-7 and 12-14, which used only amine (2) as the catalyst, the foams were inferior in flowability, adhesive strength and dimensional stability, as described at the paragraph bridging pages 68 and 69. For Comparative Examples 15-26, using the amine combination of the present claims but with a different blowing agent caused little change in flowability, adhesive strength or dimensional stability of the foams.

The second set of comparative data is analogous to the above-discussed first set, but highlights the significance of using a low boiling point hydrocarbon as an applicable blowing agent. See Tables 8, 10 and 12, and the descriptions of Examples 25-48, and Comparative Examples 30-58, in the specification at page 81, lines 1-26.

Neither the presently-claimed invention, nor the above-discussed superior results, are disclosed or suggested by the applied prior art.

The rejection of Claims 1, 2, 4, 29, and 31-33 over Tamano et al is respectfully traversed. The disclosure in Tamano et al has been discussed above. However, one skilled in the art reading Tamano et al could not have predicted the above-discussed superior results obtained with the presently-claimed catalyst in combination with the presently-recited blowing agent. In addition, Tamano et al discloses none of the blowing agents of the present invention. Rather, Tamano et al discloses the use of halomethanes and haloethanes, and trichlorofluoromethane and water are disclosed as preferred (column 5, lines 12-14). Indeed, the above-discussed comparative data indicates an inferior result when a chlorine-containing

blowing agent is used. Clearly, one skilled in the art reading Tamano et al could not have predicted the interaction of the present invention between the catalyst component and the blowing agent component.

The Examiner has dismissed the comparative data of record by simply finding that the unexpected results are not commensurate in scope with the present claims.

In reply, to the extent Tamano et al raises any *prima facie* case of obviousness, and Applicants do not admit that such a case has been made out, any showing of unexpected results must be commensurate in scope with only that part of the invention that is *prima facie* obvious. Since, as discussed above, Tamano et al does not even disclose or suggest the blowing agent of the present invention, there can be no question that the comparative data is commensurate in scope.

For all the above reasons, it is respectfully requested that this rejection be withdrawn.

The rejection of Claims 1-4 and 29-33 under 35 U.S.C. § 103(a) as unpatentable over U.S. 5,491,174 (Grier et al), is respectfully traversed. Grier et al is drawn to novel catalyst compositions comprising complexes of tin (IV) salts and amine compounds for preparing, *inter alia*, polyurethanes. Grier et al further discloses that additional cocatalysts may be used, and list tertiary amines such as the trialkylamines, and triethylenediamine (column 9, lines 47-52). However, the above-discussed comparative data applies to this rejection as well, and the discussion above with regard to the rejection over Tamano et al is hereby incorporated by reference. In addition, Claims 30 and 31 are separately patentable, because Grier et al does not even list these amines.

For all the above reasons, it is respectfully requested that this rejection be withdrawn.

The rejection of Claims 1-4 and 29-33 under 35 U.S.C. § 103(a) as unpatentable over U.S. 4,742,089 (Naka et al), is respectfully traversed. Naka et al is drawn to the production of rigid polyurethane foams by reacting a polyol component having a special composition

with an isocyanate component in the presence of a blowing agent, a reaction catalyst and a foam stabilizer having particular properties (Abstract). Among the blowing agents listed therein (column 4, lines 24-34), none are within the terms of the present claims.

Furthermore, while as the reaction catalysts, Naka et al lists various of the amines recited herein, as well as particular mixtures of amines, none of the mixtures are within the terms of the present claims. In addition, the above-discussed comparative data applies to this rejection as well, and the discussion above with regard to the rejection over Tamano et al is hereby incorporated by reference.

For all the above reasons, it is respectfully requested that this rejection be withdrawn.

All of the presently active claims in this application are now believed to be in immediate condition for allowance. The Examiner is respectfully requested to rejoin non-elected method claims of equal scope, and in the absence of further grounds of rejection, pass this application to issue with all active and rejoined claims.

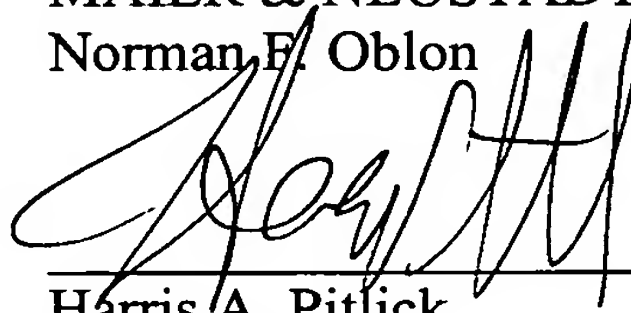
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